IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): A.D. Baker et al.
Case: 19-3
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Filing Date: January 18, 2000
Group: 2157
Examiner: Gregory G. Todd

Title: Methods and Apparatus for Local Network
Address Acquisition, Analysis and Substitution

APPEAL BRIEF

Commissioner for Patents
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Sir:

This Appeal Brief is submitted in response to the non-final Office Action dated December 19, 2006, in which the Examiner reopened prosecution responsive to the Amended Third Supplemental Appeal Brief filed by Applicants (hereinafter "Appellants") on August 24, 2006.

Appellants note that the present appeal was initiated on August 1, 2003. Appellants would also like to point out that this is the fifth appeal brief filed in the present application. In response to each of the previous appeal briefs, the Examiner has reopened prosecution. It is believed that the failure of the Examiner to permit the present application to proceed to the Board is resulting in an inefficient use of resources for Appellants and the U.S. Patent and Trademark Office, as well as an inordinate delay in prosecution.

The present application should be permitted to proceed to the Board for a decision on the merits.

REAL PARTY IN INTEREST

The present application is currently assigned to Avaya Inc. Avaya Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

Claims 1-21 are pending in the present application. Each of claims 1-21 stands rejected under one or more of 35 U.S.C. §101, §112, §102(e) and §103(a). Claims 1-21 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to an apparatus, method and machine-readable storage medium for use in interfacing a local network to one or more external network elements.

Independent claim 1 more particularly recites an apparatus for use in interfacing a local network to one or more external network elements. The apparatus comprises a gateway coupled between the local network and the one or more external network elements, the gateway being operative to determine remotely-assigned address information for a given device attached to the local network, and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

An illustrative embodiment of the invention as set forth in independent claim 1 is shown in FIG. 1 of the drawings, and includes a local area network (LAN) 102 and a gateway 110. The LAN 102 is coupled to personal computers PC-1, PC-2, ... PC-N, a printer 104 and a file server 106. The gateway 110 communicates via a DSL access multiplexer (DSLAM) 112 with external networks 114 and 116.

As indicated on page 4, lines 9-13 of the specification, a significant problem associated with a conventional gateway in a system such as that of FIG. 1 is that IP address disparity can arise between the personal computers, printer, file server or other devices attached to the LAN 102, such that direct communications between these devices are routed through one or more of the external networks 114 and 116. This is clearly undesirable in that it unnecessarily consumes network and gateway processing resources.

The illustrative embodiment solves this significant problem of the prior art by implementing an address substitution mechanism in the gateway 110. Generally, the gateway is configured to determine remotely-assigned address information for a given device attached to the LAN, and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

The address substitution mechanism in the illustrative embodiment is described as follows at page 4, lines 14-23 of the specification:

In accordance with the invention, gateway 110 is configured to intercept and store all address assignments issued by a remote network address server during an IP address assignment process, e.g. during a designated IP address exchange interval. The gateway 110 will then "trap" all incoming requests during, e.g., capabilities identification exchanges, and reissue the requests after evaluating and potentially adjusting the address fields thereof to a format suitable to each of the other devices on the LAN 102. Finally, at transport service time, the gateway 110 will receive individual message requests from devices on the LAN 102, map their addresses to appropriate substitution addresses, and reissue the messages with the altered addresses.

The address substitution mechanism implemented in the gateway 110 thus advantageously ensures that communications between devices attached to the local network are not routed through an external network as a result of disparity in their remotely-assigned IP addresses.

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Independent claims 11 and 21 may be viewed as respective method and machine-readable storage medium versions of independent claim 1, and include limitations similar to those described above in the context of claim 1.

With regard to independent claim 11, this claim is more particularly directed to a method for use in interfacing a local network to one or more external network elements. The method comprises the steps of determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network, and establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information. An illustrative embodiment of the recited method can be seen in the flow diagram of FIG. 2. This process may be implemented in the gateway 110 of FIG. 1. See the specification at page 4, line 24, to page 5, line 12.

Independent claim 21 is directed to a machine-readable storage medium that stores one or more programs for use in interfacing a local network to one or more external network elements. The one or more programs when executed by a processor implement the steps of determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network, and establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information. In an illustrative embodiment, the recited storage medium may comprise memory 304 of gateway 110 as shown in FIG. 3. Programs stored in memory 304 may be executed by processor 302 to implement address substitution operations of the type shown in FIG. 2. See the specification at, for example, page 8, lines 4-7.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-21 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

2. Claims 1-21 are rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements.

3. Claims 1-3, 5-13 and 15-21 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,088,725 (hereinafter "Kondo").

4. Claims 4 and 14 are unpatentable under 35 U.S.C. §103(a) over Kondo in view of U.S. Patent No. 6,493,348 (hereinafter "Gelman").

ARGUMENT

1. §101 Rejection of Claims 1-21

A. Claims 1-10

As described above, claim 1 is directed to an apparatus comprising a gateway coupled between a local network and one or more external network elements. The Examiner in formulating the §101 rejection argues that the recited gateway lacks utility, and more specifically, that the claim encompasses non-statutory subject matter. Appellants respectfully disagree. The recited gateway is specified as being operative to determine remotely-assigned address information for a given device attached to the local network, and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device. A gateway which performs such operations clearly has utility. It was noted above that a gateway device provides an address substitution mechanism that advantageously ensures that communications between devices attached to the local network are not routed through an external network as a result of disparity in remotely-assigned addresses.

The Examiner apparently believes that utility is lacking because the claim does not explicitly recite that a local address is assigned to the given device. However, the claim specifically recites that the given device is "attached to" the local network, and further that the substitution address established by the gateway is for use by another device attached to the local network "when communicating with the given device." Accordingly, it is believed that the claim fully and clearly recites a useful arrangement, and the §101 rejection is therefore respectfully traversed.

Dependent claims 2-10 are believed compliant with §101 for at least the reasons identified above with regard to claim 1.

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B. Claims 11-20

As described above, claim 11 is directed to a method for use in interfacing a local network to one or more external network elements. The Examiner in formulating the §101 rejection argues that the recited method lacks utility, and more specifically, that the claim encompasses non-statutory subject matter. Appellants respectfully disagree. The recited method calls for the steps of determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network, and establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information. A method which includes such steps clearly has utility. The recited steps provide an address substitution mechanism that advantageously ensures that communications between devices attached to the local network are not routed through an external network as a result of disparity in remotely-assigned addresses.

Again, the Examiner apparently believes that utility is lacking because the claim does not explicitly recite that a local address is assigned to the given device. However, the claim specifically recites that the given device is "attached to" the local network, and further that the substitution address established by the gateway is for use by another device attached to the local network "when communicating with the given device." Accordingly, it is believed that the claim fully and clearly recites a useful arrangement, and the §101 rejection is therefore respectfully traversed.

Dependent claims 11-20 are believed compliant with §101 for at least the reasons identified above with regard to claim 11.

C. Claim 21

As described above, independent claim 21 is directed to a machine-readable storage medium that stores one or more programs for use in interfacing a local network to one or more external network elements. The one or more programs when executed by a processor implement the steps of determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network, and establishing a substitution address for use by at least one other device attached to the local

network when communicating with the given device, based at least in part on the remotely-assigned address information.

As with claims 1 and 11, the Examiner apparently bases the §101 rejection of claim 21 on the fact that the claim does not explicitly recite that a local address is assigned to the given device. However, the claim specifically recites that the given device is "attached to" the local network, and further that the substitution address established by the gateway is for use by another device attached to the local network "when communicating with the given device." Accordingly, it is believed that the claim fully and clearly recites a useful arrangement, and the §101 rejection is therefore respectfully traversed.

2. §112 Rejection of Claims 1-21

The §112 rejection is based on an alleged failure to include "essential elements" in the independent claims 1, 11 and 21. The Examiner more particularly argues that these claims must recite that a local address is assigned to the given device. Appellants respectfully disagree. The statute at issues requires "claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." Thus, it is up to Appellants to determine their claim language, within the confines of the statute. Claims are considered to be definite, as required by the second paragraph of §112, when they define the metes and bounds of a claimed invention with a reasonable degree of precision and particularity. See In re Venezia, 530 F.2d 956, 958, 189 USPQ 149, 151 (CCPA 1976). Although the Examiner would apparently prefer to see the claims explicitly recite that a local address is assigned to the given device, Appellants have chosen to use other language to define the scope of their invention. For example, the independent claims in the present application recite that the given device is "attached to" the local network, and further that the substitution address established by the gateway is for use by another device attached to the local network "when communicating with the given device." Accordingly, it is believed that the allegedly omitted essential elements amount to nothing more than a subjective preference of the Examiner, which does not give rise to a violation of the second paragraph of §112.

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3. §102(e) Rejection of Claims 1-3, 5-13 and 15-21

A. Claims 1-3, 5, 9, 11-13, 15, 19 and 21

Appellants initially note that MPEP §2131 specifies that a given claim is anticipated "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the "identical invention . . . in as complete detail as is contained in the . . . claim," citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). For the reasons identified below, Appellants submit that the Examiner has failed to establish anticipation of claims 1-3, 5, 9, 11-13, 15, 19 and 21 by Kondo.

Independent claim 1 is directed to an apparatus for interfacing a local network to one or more external network elements. The apparatus comprises a gateway coupled between the local network and the one or more external network elements, with the gateway being operative to determine remotely-assigned address information for a given device attached to the local network, and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

It is important to recognize that the recited gateway is coupled between the local network and the one or more external network elements.

The Examiner argues that the each and every limitation of claim 1 is met by the arrangements described in column 9, lines 15-40, and column 10, lines 5-52, of Kondo. Appellants respectfully disagree. The relied-upon portions of Kondo relate to the operation of an address mapping server (AMS) 102 in the network system shown in FIG. 1 of Kondo, which includes separate local area networks 105a and 105b. See Kondo at column 4, lines 58-65. Kondo specifically indicates that the AMS 102 is connected to one of the LANs 105, as shown in FIGS. 1 and 11. Thus, the AMS 102 is an element of the local network itself, and not a gateway that is coupled between a local network and one or more external network elements as recited in claim 1. Instead, Kondo teaches that the local networks 105 are interfaced to Internet 106 via respective routers 103 as shown in FIGS. 1 and 11. See Kondo at column 5, lines 7-11. Kondo further teaches that it is a specific advantage of the

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arrangements described therein that such arrangements "can be realized without changing a transit device such as existing routers." See column 11, lines 60-65. This is believed to be a direct teaching away from the recited gateway, which serves to interface a local network to one or more external network elements, and implements determining and establishing operations as set forth in the claim.

In view of the above, Kondo fails to teach each and every limitation of claim 1. This claim is therefore not anticipated by Kondo.

Independent claims 11 and 21 are believed allowable for substantially the same reasons identified above with regard to independent claim 1.

Dependent claims 2, 3, 5, 9, 12, 13, 15 and 19 are believed allowable for at least the reasons identified above with regard to their respective independent claims.

B. Claims 6, 7, 16 and 17

With regard to claims 6 and 16, each of these claims specifies that the gateway stores a set of address substitution information for each of the plurality of devices, with the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway and addresses to be used by the given device in communicating with each of the other devices. The Examiner argues that these limitations are met by the teachings in FIG. 1 and column 7, lines 1-39, of Kondo. See the Office Action at page 6, first paragraph. However, the limitations in question relate to storage of address substitution information in a gateway that is used for interfacing between a local network and one or more external network elements. The relied-upon portions of Kondo fail to teach or suggest such a gateway, and fail to meet the particular type of stored information recited in the claims at issue.

Claims 7 and 17 are believed allowable at least by virtue of their dependence from claims 6 and 16, respectively.

C. Claims 8 and 18

With regard to claims 8 and 18, each of these claims specifies that a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP

addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element. The Examiner relies on the teachings in column 5, lines 15-33, of Kondo. However, the relied-upon teachings of Kondo fail to meet the limitations in question. For example, there is no mention in the relied-upon teachings of stored address substitution information for a particular device comprising IP addresses each of which is sub-network compatible with a remotely-assigned IP address of that particular device. It also appears that the arrangement in Kondo will not prevent communications between devices on the same local network from traversing the external network.

D. Claims 10 and 20

With regard to claims 10 and 20, each of these claims specifies that the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device. The Examiner relies on the teachings in column 5, lines 15-61, of Kondo. Appellants initially note that these teachings do not relate to operations performed in a gateway of the type recited in the claim. Moreover, the cited portions fail to make any mention of interception of control information or maintenance information, or of the claimed performance of related services on behalf of a local device. Accordingly, it is believed that Kondo fails to meet the limitations in question.

4. §103(a) Rejection of Claims 4 and 14

A proper *prima facie* case of obviousness requires that the cited references when combined must "teach or suggest all the claim limitations," and that there is some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §706.02(j).

Appellants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in the §103(a) rejection over Kondo and Gelman, in that the Kondo and Gelman references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in

that no cogent motivation has been identified for combining the references or modifying the reference teachings to reach the claimed invention.

As noted above, Kondo fails to teach or suggest the particular address substitution mechanism that is set forth in independent claims 1 and 11, from which respective claims 4 and 14 depend. Gelman fails to supplement this fundamental deficiency of the Kondo. Accordingly, it is believed that the proposed combination of Kondo and Gelman fails to meet the limitations of claims 4 and 14.

Moreover, the combined teachings of Kondo and Gelman fail to disclose a gateway device comprising an ATU-R device with the particular functionality claimed. Although Gelman mentions the use of an ATU-R, it fails to specifically suggest the incorporation of address substitution functionality into an ATU-R device. It therefore appears that the Examiner in rejecting claims 4 and 14 has simply undertaken a hindsight-based reconstruction of the claimed invention, with the benefit of the disclosure provided by Appellants.

Accordingly, it is believed that the Kondo and Gelman references, even if assumed to be combinable, fail to meet the limitations of independent claim 1 regarding a gateway which establishes a substitution address for use in communications between devices on a common local network. It is further apparent that such a combination fails to provide a solution to the particular problem addressed and solved by the present invention, namely, that of preventing communications between devices on a local network from traversing an external network.
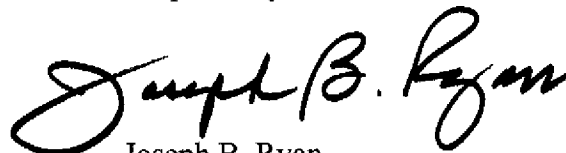
Also, as indicated previously, the Examiner has failed to identify a cogent motivation for combining the references or modifying the reference teachings to reach the claimed invention. The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." Id. at 1343-1344. There has been no showing in the present §103(a) rejection of objective evidence of

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record that would motivate one skilled in the art to combine Kondo and Gelman, or to modify the proposed combination of Kondo and Gelman, to produce the particular limitations in question.

The statement of obviousness given by the Examiner in the Office Action at page 7, section 6, is precisely the type of subjective, conclusory statement that the Federal Circuit has indicated provides insufficient support for an obviousness rejection. For example, the Examiner states that the combination would be obvious because it would "expand the capability" of the Kondo system. However, Kondo has indicated at column 11, lines 60-65, a clear desirability for implementations which do not alter network equipment such as routers. That is why Kondo teaches to implement the AMS 102 as an element of the local network 105. Thus, one skilled in the art would not be motivated to apply the Kondo techniques to network elements such as an ADSL ATU-R device as recited in claims 4 and 14.

In view of the foregoing, Appellants believe that claims 1-21 are in condition for allowance, and respectfully request the withdrawal of the §101, §112, §102(e) and §103(a) rejections.

Respectfully submitted,

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1. An apparatus for use in interfacing a local network to one or more external network elements, the apparatus comprising:

a gateway coupled between the local network and the one or more external network elements, the gateway being operative to determine remotely-assigned address information for a given device attached to the local network; and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

2. The apparatus of claim 1 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the given device by an external network element.

3. The apparatus of claim 1 wherein the local network comprises a local area network (LAN).

4. The apparatus of claim 1 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

5. The apparatus of claim 1 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

6. The apparatus of claim 5 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

7. The apparatus of claim 6 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

8. The apparatus of claim 6 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

9. The apparatus of claim 1 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

10. The apparatus of claim 1 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

11. A method for use in interfacing a local network to one or more external network elements, the method comprising the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information.

12. The method of claim 11 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the given device by an external network element.

13. The method of claim 11 wherein the local network comprises a local area network (LAN).

14. The method of claim 11 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

15. The method of claim 11 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

16. The method of claim 15 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

17. The method of claim 16 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

18. The method of claim 16 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

19. The method of claim 11 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

20. The method of claim 11 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

21. A machine-readable medium storing one or more programs for use in interfacing a local network to one or more external network elements, wherein the one or more programs when executed by a processor implement the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None